

Layering of the Oceanic Uppermost Mantle

Mamoru Kato [1]

[1] Dept. Geophys., Kyoto Univ.

We have investigated seismic layering in the upper mantle and its lateral variation by comparing 1-D seismic models. Two complementary data sets that are derived from long-period seismic waveform records are inverted for regional anisotropic velocity models. Observed variation of the depth of the discontinuity between the seismic lid and low-velocity zone in two regions, western Philippine Sea and southern Pacific, implies that thermal cooling alone does not control the lid thickness. We interpret this discontinuity as a compositional boundary marking the fossilized base of the melt separation zone during the sea-floor spreading. A petrological model satisfactorily explains observed positive correlation between thickness of crust and that of lid.